

Serial No.: 09/858,098  
Group Art Unit: 2633  
Examiner: Leslie C. Pascal

**Amendment to the Claims**

1 (Previously Amended). A communications network comprising:  
a pair of network elements;

two or more working fibers coupled between said pair of network elements for carrying communications traffic between said pair of network elements, each working fiber carrying said communications traffic over a plurality of channels associated with one or more rings;

a shared protection fiber coupled between said network elements, said shared protection fiber providing a plurality of channels in excess of the number of channels of one or more of the working fibers;

wherein said network elements include circuitry for concurrently switching communication traffic on rings associated with different working fibers to respective channels of said shared protection fiber.

2 (Previously Amended). The communications network of claim 1 wherein said shared protection fiber provides a plurality of channels in excess of the number of channels of any of the one or more working spans.

3 (Previously Amended). The communications network of claim 1 wherein at least one of said working fibers carries traffic for multiple ring structures.

4 (Original). The communications network of claim 1 wherein said pair of network elements each includes a non-blocking optical matrix.

5 (Previously Amended). The communications network of claim 4 wherein each of said pair of network elements is coupled to two or more incoming working fibers and two or more corresponding incoming protection fibers.

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6 (Previously Amended). The communications network of claim 5 wherein each of said pair of network elements includes control circuitry for switching a channel from each of said incoming protection fibers to an available channel of said shared protection fiber.

7 (Previously Amended). The communications network of claim 6 wherein said control circuitry further is operable to switch a channel from each of said incoming working fibers to said shared protection fiber.

8 (Previously Amended). The communications network of claim 5 wherein each of said pair of network elements includes control circuitry for switching a channel from said shared protection span to a channel on an outgoing protection fiber.

9 (Previously Amended). A network element comprising:  
interface circuitry for coupling to two or more incoming working fibers and two or more respective incoming protection fibers, each of said working fibers operable to carry communications traffic over a plurality of channels associated with one or more rings; and  
switching circuitry for concurrently coupling channels from different incoming protection fibers to a shared protection fiber, said shared protection fiber providing a plurality of channels in excess of the number of channels of one or more of the working fibers.

10 (Previously Amended). The communications network of claim 1 wherein shared protection fiber provides a plurality of channels in excess of the number of channels of any of the one or more working fibers.

11 (Previously Amended). The network element of claim 9 wherein said switching circuitry includes control circuitry for selective switching a channel from an incoming protection fiber to an available channel on said shared protection fiber responsive to control information.

12 (Original). The network element of claim 11 wherein said switching circuitry further includes a non-blocking optical matrix.

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13 (Original). The network element of claim 9 wherein said interface circuitry includes a channel demultiplexer.

14 (Original). The network element of claim 13 wherein said interface circuitry further includes a channel multiplexer.

15 (Original). The network element of claim 14 wherein said interface circuitry includes input/output shelves coupled to said demultiplexer and said multiplexer.

16 (New). An optical network, comprising:

a first fiber ring including at least a first node and a second node, wherein the first fiber ring includes a first working fiber, wherein the first working fiber carries a plurality of channels;

a second fiber ring including at least the first node and the second node, wherein the second fiber ring includes a second working fiber, wherein the second working fiber carries a plurality of channels;

a shared protection fiber coupled between the first node and the second node, said shared protection fiber providing a plurality of channels in excess of the number of channels of one or more of the working fibers; and

wherein any channel from the first working fiber from the first fiber ring and any channel from the second working fiber from the second fiber ring can be currently switched to respective channels of the shared protection fiber.

17. The optical network of claim 16, further comprising:

a first protection fiber for connecting any other nodes on the first fiber ring to the first and second nodes;

a second protection fiber for connecting any other nodes on the second fiber ring to the first and second nodes; and

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wherein any channel from the first protection fiber from the first fiber ring and any channel from the second protection fiber from the second fiber ring can be currently switched to respective channels of the shared protection fiber.